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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Akira Usami

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EXAMINER

TAKEUCHI, YOSHITOSHI

ART UNIT

PAPER NUMBER

4162

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,172	Applicant(s) USAMI, AKIRA	
	Examiner YOSHITOSHI TAKEUCHI	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>May 12, 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3, 7, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Defining a claim to depend from two or more base or intervening claims is capable of two or more means, so is indefinite. Appropriate correction is required. In examining the application, the examiner afforded the application the broadest reasonable reading.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. Claims 1, 2, 3, 4, 5, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanabe et al (US 5,820,819) in view of Buck (US 2004/0154707). Tanabe teaches a steel composition with excellent pitting resistance and rust adhesion characteristics for use in gas ducts in thermal power plants. (Abstract). The Tanabe composition consists essentially, by weight, of: Carbon (0.01 to 0.15%); Silicon (0.01-0.5%); Manganese (0.1-1.5%); Phosphorous (0-0.025%); Sulfur (0-0.01%); Chromium (2.5-7.0%); Nickel (<1.0%); Titanium (0.005-0.05%); Copper (0.10-1.0%); Niobium (0.005-0.1%); Vanadium (0.005-0.1%); Tantalum (0.001-0.1%); Boron (0.0003-0.0050%); Zirconium (0.0002-0.10%) (column3, lines 35-53 and column 4, lines 8-27). However, Tanabe did not teach an Antimony composition of 0.01% to 0.2% by weight.

Buck teaches the composition of a fine-grain martensitic stainless steel (page 1, paragraph 0002) with similar composition to the composition in Tanabe (Page 5, paragraph 0048) and also teaches Sb is an impurity which should be limited to less than 0.04% by weight (page 4, paragraph 0040). The metal compositions taught by Tanabe and Buck are similar, so it would have been obvious to one of ordinary skill in the art at the time of the invention to limit the amount of Antimony to less than 0.04% by weight, as taught by Buck, in the Tanabe composition in order to maintain adequate toughness and a good combination of mechanical properties.

Claims 1, 2, 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as obvious over Buck (US 2004/0154707). Buck teaches the composition of a fine-grain martensitic stainless steel (page 1, paragraph 0002) with good corrosion resistance (page 5, paragraph 0048). Buck teaches a composition consisting, by weight of: Carbon ($0.05 < C < 0.15\%$); Chromium ($7.5 < Cr < 15\%$); Nickel ($1 < N < 5\%$); Copper ($< 5\%$); Manganese ($< 5\%$); Tungsten or Molybdenum (combined $< 4\%$); Titanium

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($0.01 < \text{Ti} < 0.75\%$); Zirconium ($< 1.6\%$); Tantalum ($< 3.2\%$); Niobium ($< 1\%$); Vanadium ($< 2\%$); Aluminum and Silicon (combined $< 1.5\%$); Boron ($< 0.1\%$); Cesium ($< 0.1\%$); Magnesium ($< 0.1\%$); Yttrium ($< 0.1\%$); Lanthanum ($< 0.1\%$); Calcium ($< 0.1\%$); Phosphorus ($< 0.1\%$); Sulfur ($< 0.03\%$); Lead ($< 0.04\%$) (page 5, paragraph 0048); and Antimony ($< 0.04\%$) (page 4, paragraph 0041). Aside from the Nickel composition range, the range of each constituent in the instant invention significantly overlaps with the composition taught by Buck. Buck teaches that each of these elements is included for specific purposes and is useful within certain ranges. For example, Ti, Nb, Zr, and Ta are strong carbide and nitride forming elements (page 3, paragraph 0022); C is an interstitial solute element (page 4, paragraphs 0028); Ni, Mn, and Cu are non-carbide forming, austenite stabilizing elements (page 4, paragraphs 0030); Si, Mo, and W are ferrite stabilizing elements (page 4, paragraphs 0030); Cr provides corrosion resistance (page 4, paragraph 0036); Al, Si, Ce, Ca, Y, Mg, La, and B are impurity getterers (page 4, paragraph 0038); and S, P, Sn, Sb, and Pb are impurities (page 4, paragraph 0040). As a result, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the amount of each element in the composition for the particular use, including the use in an environment with exposure to water and steam. The nickel range taught by Buck is substantially close to that of the instant claims one of ordinary skill would have expected compositions that are in such close proportions to those in prior art to be prima facie obvious, and to have same properties (*Titanium Metals Corp.*, 227 USPQ 773 (CA FC 1985)).

Regarding the claimed properties wear resistance, where the claimed and prior art products are identical or substantially identical in structure or composition, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252 (CCPA 1977).

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6. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the IEEE article, Understanding the TEWAC Motor, Richard L. Nailen, 350 Understanding the TEWAC Motor, Vol. 1A-11 No. 4 IEEE Transactions on Industry Applications, in view of Tanabe et al (US 5,820,819) and further in view of Buck (US 2004/0154707).

Regarding claim 9, the article, Understanding the TEWAC Motor, teaches totally enclosed heat exchangers used in corrosive environments for large motors, which include exhaust gas ducts. These exhaust gas ducts can use “double-tube” coolers, where “each tube consists of an inner core containing the normal coolant flow, with longitudinal flutes or ridges separating it from an outer finned tube.” Nailen at 354 (1975). Nailen does not teach the metal composition. Tanabe teaches a steel composition, with excellent pitting resistance and rust adhesion characteristics, for use in gas ducts in thermal power plants. (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the metal composition of Tanabe as modified by Buck in the duct of the TEWAC because of its known rust adhesion characteristic in a heated environment with water, in order to prolong the life of the heating duct.

Regarding claim 12, the article, Understanding the TEWAC Motor, teaches a totally enclosed heat exchanger means used in corrosive environments for large motors, which includes an exhaust gas duct wherein said exhaust gas duct is an exhaust gas duct where a plurality of tubes are joined and arranged at an opposite surface of the passage of the exhaust gas from the gas contact surface and has the function of circulating a coolant through said tubes. Nailen at 350 (1975). Nailen does not teach the metal composition. Tanabe teaches a steel composition, with excellent pitting resistance and rust adhesion characteristics, for use in gas ducts in thermal power plants. (Abstract). It would have been

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obvious to one of ordinary skill in the art at the time of the invention to use the metal composition of Tanabe as modified by Buck because of its known rust adhesion characteristic in a heated environment with water, in order to prolong the life of the heating duct.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe (US 5,829,819) in view of Buck (US 2004/0154707), and further in view of Meyer et al (US 3,604,376). Tanabe and Buck teach steel compositions with excellent corrosion resistance characteristics. Neither Tanabe or Buck teaches the corrosion-resistant steel compositions in a ductwork system. However, Meyer teaches a ductwork system for use in a corrosive environment (column 1, line 74) consisting of a substantially four-sided structure made up of a plurality of internally water-cooled panels (column 3, line 24-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the metal composition of Tanabe as modified by Buck in the heating duct system taught by Meyer because of its known corrosion resistance characteristic in a heated environment with water, in order to prolong the life of the heating duct.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSHITOSHI TAKEUCHI whose telephone number is (571) 270-5828. The examiner can normally be reached on Monday-Thursday 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yoshitoshi Takeuchi/

/Jennifer McNeil/

Supervisory Patent Examiner, Art Unit 4162